Amendments to the Claims

Please amend the claims without prejudice. The listing of claims will replace all prior versions and listings of claims in the application:

Listing of the Claims

1. (Currently amended) A method of evaluating changes for a wellbore interval, comprising:

obtaining first log data acquired by a logging sensor ~~(8, 5, 6, 3)~~ during a first pass over the wellbore interval;

obtaining second log data at a time later than the first log data, said second log data being acquired by the logging sensor during a second pass over the wellbore interval;

calculating a plurality of delta values between the first log data and the second log data, ~~wherein~~ each delta value ~~is~~ being calculated by taking a difference between a parameter of said first and second log data;

deriving an observed effect using the plurality of the delta values; and

identifying a correlation between the observed effect and a causal event; ~~and~~

displaying said correlation on a display device so that changes for the wellbore interval can be evaluated as ~~well~~ to the probable causal event responsible for the changes, wherein said correlation displaying comprises displaying a matrix comprising a header row defining possible causes in order to determine whether there has been a significant change in the parameter, and a header column defining the major formation parameter made by the logging sensors, a cell existing for every possible correlation identified between the observed effect and the probable causal event; and

analyzing the causal event and changes for the wellbore interval based on the displayed matrix.

2. (Canceled).

3. (Previously presented) The method of claim 1, wherein the logging sensor measures at least one parameter selected from the group consisting of gamma ray, resistivity, neutron porosity, density, ultrasonic caliper, and sigma.

4. (Previously presented) The method of claim 1, wherein the logging sensor is disposed on an integrated measurement tool.

5. (Previously presented) The method of claim 1, wherein the correlation is a depth correlation.

6. (Previously presented) The method of claim 1, wherein the correlation is a time correlation.

7. (Currently amended) The method of claim 1, further comprising:

calculating a relative effect using a sensitivity factor to adjust the correlation; and

displaying the correlation and the relative effect on ~~a~~ the display device ~~(82)~~.

8. (Currently amended) A system for evaluating changes for a wellbore interval comprising:

a well log data acquisition system ~~(7)~~ for acquiring first log data and second log data, at a time later than said first log data, from a logging sensor ~~(8, 5, 6, 3)~~ during a plurality of passes over the wellbore interval; and

a well log data processing system ~~(72,74, 76)~~ for:

calculating a plurality of delta values between the first log data and the second log data, ~~wherein~~ each delta value ~~is~~ being calculated by taking a difference between a parameter of said first and second log data;

deriving an observed effect using the plurality of the delta values;

identifying a correlation between the observed effect and a causal event; ~~and~~

displaying the correlation on ~~the~~ a computer display device so that changes for the wellbore interval can be evaluated as ~~well~~ to the probable causal event responsible for the changes, wherein said correlation displaying comprises displaying a matrix comprising a header row defining possible causes in order to determine whether there has been a significant change in the parameter, and a header column defining the major formation parameter made by the logging sensors, a cell existing for every possible correlation identified between the observed effect and the probable causal event; and

analyzing the causal event and changes for the wellbore interval based on the displayed matrix.

9. (Canceled).

10. (Previously presented) The system of claim 8, wherein the logging sensor measures at least one parameter selected from the group consisting of gamma ray, resistivity, neutron porosity, density, ultrasonic caliper, and sigma.

11. (Previously presented) The system of claim 8, wherein the logging sensor is disposed on an integrated measurement tool.

12. (Previously presented) The system of claim 8, wherein the correlation is a depth correlation.

13. (Previously presented) The system of claim 8, wherein the correlation is a time correlation.

14. (Currently amended) The system of claim 8, further comprising a well log data processing system ~~(72, 74, 76)~~ for calculating a relative effect using a sensitivity factor to adjust the correlation; and displaying the correlation and the relative effect on ~~a~~ the computer display device.

15. (Currently amended) A computer system for evaluating changes for a wellbore interval, comprising:

a processor ~~(72)~~;

a memory ~~(74)~~;

a storage device ~~(76)~~;

a computer display ~~(82)~~; and

software instructions stored in the memory for enabling the computer system under control of the processor, to perform:

gathering first log data from a logging sensor during a first pass over the wellbore interval;

gathering second log data, at a time later than said first log data, from the logging sensor during a second pass over the wellbore interval;

calculating a plurality of delta values between the first log data and the second log data, ~~wherein~~ each delta value ~~is~~ being calculated by taking a difference between a parameter of said first and second log data;

deriving an observed effect using the plurality of the delta values;

identifying a correlation between the observed effect and a causal event; ~~and~~

displaying the correlation on the computer display so that changes for the wellbore interval can be evaluated as ~~well~~ to the probable causal event

responsible for the changes, wherein said correlation displaying comprises displaying a matrix comprising a header row defining possible causes in order to determine whether there has been a significant change in the parameter, and a header column defining the major formation parameter made by the logging sensors, a cell existing for every possible correlation identified between the observed effect and the probable causal event; and

analyzing the causal event and changes for the wellbore interval based on the displayed matrix.